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A CASE OF LANDRY'S PARALYSIS.

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The following case of acute and fatal paralysis, which apparently should be classed with those first described by Landry, presents some peculiar features which seem worthy of record, apart from the comparative rarity of cases of this kind:

Caroline K., a widow, aged 40, was admitted to the Danvers Lunatic Hospital, April 14, 1896. According to the statements of her sister and physician, she first began to show symptoms of mental derangement about the middle of December, 1895. She first imagined that she was pregnant, though she had ceased to menstruate three years before, and consulted a number of physicians on this account. Subsequently she imagined that she had blood poisoning from a dead fœtus. She soon took her bed, and kept it until about March 1, at which time, at the urgent command of her brother, she began to sit up during a part of the day, and walked out a little. On hearing of the death of Governor Greenhalge of Bright's disease, she concluded that such was her complaint, and resumed her bed. She complained of violent abdominal pains, and often made a great outcry. Three or four weeks before her admission, her urine was noticed to be "bloody," and an examination at this time showed the presence of albumin and casts, which had not previously been found.

About four weeks before admission she began to complain of numbness in her hands. She manifested no difficulty in using them until about a week ago. On the 9th inst. she spilled some medicine she was trying to take, and from that time on used her hands but little. Two days later she seemed completely paralyzed in all the extremities. The paralysis was considered by her physician to be merely a hypochondriacal delusion, and she was said to have been noticed to make movements when not watched.

Among other sedatives, small doses of sulphonal and trional had been given, but, according to her physician's statement, he had prescribed nothing of the sort for some weeks before her admission.

The patient had suffered, some years previously, from paralysis of the left facial nerve, from which she had only partially recovered.

No history of insanity in the ancestry was obtained, but a son of the patient is an epileptic idiot.

On admission the patient was found to be a slender woman, not markedly emaciated. No evidence of disease of the thoracic or abdominal viscera was found on physical examination. There was a moderate degree of paralysis of the left facial nerve; the eye could not be completely closed, and the innervation of the mouth was inferior to that of the right side. Otherwise, the movements of the facial muscles seemed unimpaired. There was apparently almost complete paralysis of all the extremities. On passive motion they fell into positions determined entirely by gravity. In all the extremities the paralysis seemed to increase in intensity toward the trunk. The fingers and toes could be moved a little; the hands and feet very slightly; arms and forearms, legs and thighs, not at all. In respiration the diaphragm alone was active.

The pupils reacted normally to light. Knee jerks could not be elicited. There was no response to tickling the soles of the feet.

The reaction to the faradic current was very slight in the hands and forearms, feet and legs, of both sides. Reaction was less on the right than the left side. The ulnar and median nerves were less excitable than the muscles supplied by them. No reaction at all could be obtained by the full power of the (rather weak) battery in thighs, upper arms or pectoral muscles. The galvanic battery was found not to be in working order.

There was great impairment of sensation, corresponding in distribution to the motor paralysis. The head and face seemed entirely unaffected. On the hands and feet touch, pain and temperature were fairly well felt and localized; on the forearms and legs, there was very marked impairment of all forms of sensation; on the upper arms and thighs, only very firm pressure could be felt, and a pin could be thrust through a fold of the skin without her appearing to notice it at all, although, when questioned, she said it felt like something sticking in. Over the abdomen, transfixion of a fold of skin felt like something hot.

The visual fields were not narrowed, and there seemed to be no impairment of any of the special senses.

Mentally, the patient seemed rather apathetic. She answered questions relevantly, and, so far as could be determined, correctly, but seldom spoke otherwise. Memory appeared rather poor. There was, at the time of the examination, no appearance of hypochondriacal delusions, or of a disposition to exaggerate her symptoms.

A specimen of her urine attracted attention at once by its peculiar appearance. It was of a claret color, very different from that usually imparted by blood; acid in reaction; contained a trace of albumin and a few hyaline casts.

No change was noticed in her condition during the night of the 15th. At 9.30 of the morning of the 16th she asked for the bed-pan, in order to have a movement of the bowels. Immediately afterward the nurse noticed a change for the worse. A physician was called at once, but when he reached the ward respiration had ceased, although the heart was still beating.

At the autopsy, five hours after death, no lesion of the nervous system could be discovered. The only morbid appearances found were slight emphysema and a catarrhal condition of the gastric mucous membrane.

The results of the histological examination were as follows:

Cerebrum.—The only changes noted were in the large nerve-cells, characteristic of the excitable region of the cortex. A large proportion of these presented a swollen appearance, giving the impression of the deposit of a morbid material in their interior. In specimens stained by the Nissl method the marking was confined to the surface and the processes of the cells. Both in these specimens and in those hardened in bichromate solution and stained with carmine, the nuclei of these cells were displaced, either into one of the processes, or to the surface of the cell, in which latter case they often projected beyond the surface. These changes are familiar enough to all who have done such work with the Nissl method, and are observed in a variety of morbid conditions. No morbid alterations were detected in the other regions of the brain examined, and the nerve fibres, in specimens stained by Pal's method, appeared normal.

Medulla Oblongata.—Sections at different levels, stained by Pal's and Van Gieson's methods, appeared normal.

Spinal Cord.—Sections from the lumbar enlargement, stained by Nissl's method, showed, in a considerable number of the large cells of the anterior horns, an apparent breaking up of the colored substance in the interior of the cells into fine granules. A few cells presented changes similar to those described in the brain. Side by side with these were numerous cells that appeared entirely normal. Sections from various parts of the cord stained by the Marchi method showed a few degenerate fibres, but not enough to account for any serious symptoms.

Specimens hardened in bichromate, and stained with carmine and by Pal's and Van Gieson's methods, presented no abnormal appearances.

Peripheral Nerves.—The sections of the nerve roots made in connection with those of the spinal cord appeared normal by all the methods of staining employed. Specimens from a cord of the lumbar plexus and the right radial nerve were prepared by Marchi's method. A few varicose nerve fibres stained faintly with the osmic acid, but there was no appearance of segmentation of myelin.

Specimens from the radial nerve and several muscular branches were preserved in solution of osmic acid and dissociated. Many of the fibres showed much varicose swelling, but no segmentation of myelin was found.

Kidney.—The only abnormality found was an apparent flattening of the epithelium of the convoluted tubules.

We have here a rapidly developing motor and sensory paralysis, the former predominating, affecting the muscles of the trunk and extremities, and sparing those of the head and face, proving fatal, apparently, by arrest of respiration. Concurrently with this was observed a peculiar color of the urine, attributed by her physicians to blood. The urine contained no blood corpuscles at the time of my examination.

It seems to me improbable that this is a mere coincidence. The history of the case is suggestive of a toxic process, and it seems probable that the change in color of the urine was indicative of a morbid condition of the blood. I at once suspected porphorinuria from sulphonal intoxication, but was unable to learn that she had taken more than a few doses of sulphonal and trional, some time before the symptoms referred to made their appearance.

The anatomical lesions found, though they may, perhaps, be brought into connection with the symptoms, do not seem to me to account for them satisfactorily. From the fact that stimulation of the muscles supplied, for instance, by the ulnar nerve, produced stronger contractions than stimulation of the nerve itself, it seems evident that the lesion could not have been confined to the central nervous system, but that the nerves must, at least, have participated in it. The fact that both motion and sensation were involved over the same area would point in the same direction. Yet no unequivocal morbid appearances could be found in the nerve roots or their peripheral distribution.

The question of classification now presents itself, and is, to me, a rather perplexing one. So far as I have been able to discover, the only commonly recognized form of nervous disease to which the case can be referred is that to which reference has already been made—the acute ascending paralysis described by Landry. The description of this disease given in all the text-books to which I have access agrees with the definition given in Gould's Medical Dictionary, which I will quote: "A form of atonic paralysis, described by Landry, characterized by a loss of motor power in the lower extremities, gradually extending to the upper extremities and to the centres of circulation and respiration, without characteristic sensory manifestations, trophic changes, or variations in electrical reaction."

It is at once evident that, if all parts of the foregoing definition are considered essential, my case is excluded by the very pronounced impairment of both sensation and electrical excitability.

Walton, in a paper published in the *Boston Medical and Surgical Journal,* December 26, 1895, takes the ground that Landry's paralysis is really a multiple neuritis. He analyzes the published cases in regard to sensation and electrical reaction, and finds that, among 122 cases, disturbances of sensation were reported in 74, and that only in 16 was it definitely stated that sensation was unimpaired.

In a large number of the reported cases the electrical reactions were not ascertained, but reaction of degeneration was found in a considerable number. Out of the 122 cases analyzed by Walton, only five were found in which sensation and electrical reaction were both stated to be normal. It is, therefore, apparent that if the above definition is to be considered authoritative in all particulars, a large proportion of the reported cases are incorrectly assigned to this disease.

Walton proposes the following description:

"Landry's paralysis is an acute, toxic disease, characterized by rapid loss of power in the lower extremities, trunk, and, to a less degree, in the upper extremities, affecting also the vagus and phrenic, sometimes other cranial nerves. The affected muscles are lax. Pain, paræsthesia, anæsthesia and tenderness are generally present in varying degrees, though, in some cases, sensory disturbances are wanting. Death follows in more than half (64%) of the cases. Recovery, when present, is very slow. The reflexes, deep and superficial, are lost at an early stage; wasting and degenerative reaction appear if the patient survives. The process is a toxic affection of the peripheral nerves (neuritis), cord and brain, the former being the essential and persistent lesion."

My own case would come, easily enough, under the foregoing definition. It is true that the lesions characteristic of multiple neuritis were not found in the nerves, but the electrical reaction, already mentioned, proves conclusively, to myself, that their function was impaired, and it is quite possible that the case had not lasted long enough for the development of the characteristic lesions.

That the case was of toxic origin can, I think, hardly be doubted. The nature of the poison is, unfortunately, obscure, but it seems reasonably certain that it was in some way connected with the peculiar color of the urine, which made its appearance at about the same time with the paralysis. It seems altogether unlikely that this is the first or last case of this kind, and it is to be hoped that some future observer will be more fortunate than I in this particular.